How to CONTROL FLEAS

Leaflet No. 152
U. S. DEPARTMENT OF AGRICULTURE

By F. C. Bishopp, *assistant chief in charge of research, Bureau of Entomology, and Plant Quarantine, Agricultural Research Administration*

Fleas are troublesome pests of man and domestic animals, and certain species that infest rats and other animals carry a number of serious diseases of man, such as bubonic plague and endemic typhus, or act as hosts for internal parasites.

Kinds and Habits of Fleas

There are many different kinds of fleas, but most of them have somewhat similar habits. Some confine their attacks to certain kinds of birds or animals, while others will suck blood from almost any warm-blooded animal. There are three kinds of fleas that commonly become serious pests of man in this country. These are the dog flea (*Ctenocephalides canis* (Curt.)), the cat flea (*C. felis* (Bouché)) (fig. 1), and the human flea (*Pulex irritans* L.) (fig. 2). In the South the stick-tight flea (*Echidnophaga gallinacea* (Westw.)) (fig. 3) infests poultry and occasionally annoys man. The dog and cat fleas are very similar in appearance, and they feed interchangeably on dogs and cats. These are the fleas that are responsible for house invasions in the Eastern States. The human flea may live on many different animals. Often it is associated with hogs and breeds in the litter in hog houses. It also lives on dogs and cats and on wild animals, such as coyotes, badgers, and skunks. This is the flea most frequently found annoying man in the Mississippi Valley, in Texas, and westward to the Pacific coast.

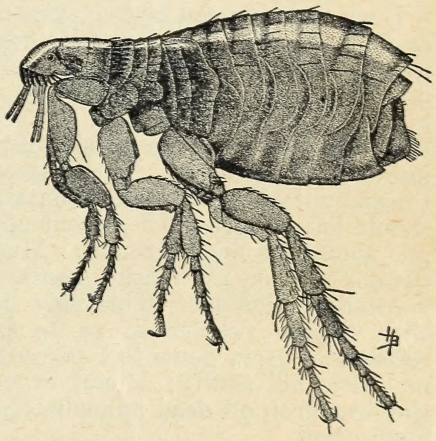

Figure 1.—Cat flea (female), greatly enlarged.

All fleas require the blood of birds or animals in order to reproduce. There is no true "sand flea" breeding in the sand without animals upon which to feed.

Washington, D. C. Issued November 1937
Revised October 1946

718977°—46

Stages of Development

All fleas pass through four stages—the adult, the egg, the larva or maggot, and the pupa or resting stage. The adults are found on animals or hopping about on the ground. The eggs are laid while the female is on the host and drop to the ground, where they hatch in a few days into legless larvae (fig. 4). In 2 weeks or more the larvae become full-grown, and then spin tiny cocoons, in which they change to adult fleas in a week or more.

FIGURE 2.—Human flea (female), greatly enlarged.

Fleas often breed in tremendous numbers in basements or outbuildings where dogs, cats, or hogs are kept. Even when the hosts are taken away, the flea maggots proceed with their development, and the resulting adults may live for several weeks without food. This accounts for the frequency with which people find their homes overrun with fleas when they return from a summer vacation.

Control of Fleas on Animals

Dogs and cats can be kept practically free of fleas by occasionally applying derris or cube powder next to the skin along the back and neck and on top of the head. If animals have free run, this treatment must be repeated every 2 weeks. A level teaspoonful is enough to kill every flea on a large dog. For smaller animals the amount should be reduced according to the size of the animal. Most derris and cube powders are effective. Their insect-killing value depends largely on the amount of rotenone they contain. They should have at least 0.5 percent of rotenone and should be finely ground. Much of the powder now on the market contains 4 or 5 percent of rotenone. This may be diluted with talcum powder so as to bring the rotenone content down to 1 percent. These materials kill slowly; do not expect to see the fleas drop off dead immediately after an application.

FIGURE 3.—Sticktight flea (female), greatly enlarged.

If derris or cube is not at hand, fresh finely ground pyrethrum powder (insect powder) may be used as a dust. Pyrethrum powder should contain not less than 0.9 percent of pyrethrins; the insecticidal principles of pyrethrum.

None of these materials are considered poisonous to domestic animals, although cats are sometimes thrown off their feed by licking the material from the coat. As the eyes are sensitive to derris and cube, care should be taken not to get these powders into them.

DDT will destroy fleas on animals. It is most conveniently applied to dogs as a 10-percent powder distributed next to the skin on the head, neck, and back as described for derris or cube. A tablespoonful is

enough for an average-size dog. DDT excites the fleas, and their increased activity on an animal causes discomfort for a short time, after which the fleas are overcome. From a few hours to 2 or 3 days are required for the infestation to disappear.

Although DDT has been used satisfactorily against fleas on cats, it is not advised for such use because cats may lick off enough of the DDT to injure them.

In areas where the human flea abounds, the dogs and cats should be treated as outlined above, and hogs should be kept from barns and from going beneath buildings. The backs of hogs should be sprinkled lightly with crankcase oil or crude petroleum every 2 or 3 weeks, or, better, with DDT at 0.2-percent strength applied to the animals as a spray or dip. DDT is now available for such use in the form of wettable powders or emulsifiable liquids.

If fleas are properly controlled on animals, house and yard infestations will be avoided.

Destroying Fleas in Houses and Outbuildings

Fleas in houses and barns originate in the sleeping places of animals. If these are in cellars, in outbuildings, or beneath buildings or porches, spraying the infested areas with DDT or creosote oil is most satisfactory. DDT may be applied as a 5-percent solution in kerosene or fuel oil, as a 5-percent emulsion in water, or as a 2.5-percent suspension in water. A wettable powder containing 50 percent of DDT can be purchased for preparing suspensions by mixing with water.

A garden-type compressed-air or knapsack sprayer is satisfactory for applying DDT insecticides. A bucket or stirrup pump with a lead of high-pressure hose with tight connections is best for applying creosote oil.

Creosote oil will burn animals and plants. It has an objectionable odor and will stain. Therefore it cannot be used in every situation. It is necessary to spray only the floors of a cellar or outbuilding. Creosote oil is relatively cheap and is generally available, since it is commonly used as a wood preservative. It is remarkably effective against fleas. Usually one light spraying will wipe out an infestation. One-half gallon is sufficient for 1,000 square feet of floor surface. More is required for dirt floors with cracks or where much dust or litter is present.

FIGURE 4.—Larva, or maggot, of a flea, greatly enlarged.

When fleas are found to be breeding in hogpens or barns, the litter should be raked up and scattered on fields, or burned, before the spray is applied or after a preliminary spraying to give relief while cleaning up.

If fleas are abundant in living quarters, scatter flaked naphthalene over the floor of each infested room at the rate of 5 pounds per room. Keep the room closed for 48 hours. The remaining naphthalene crystals may be swept up and put in a tight container for future use. If animals have been sleeping on overstuffed furniture, it also should be covered with the naphthalene.

When the main trouble is in the basement, the DDT or creosote oil sprays applied there will usually give prompt relief. The scat-

tered fleas carried into the living rooms may be destroyed with a commercial fly spray applied with an atomizer. The fleas must be hit by the spray.

Occasionally fleas will spread from infested outbuildings or basements to the yard and lawn. Treatment of the breeding places and keeping the lawn closely cut will usually meet this situation. Fleas do not live long when exposed to sunshine and rains. If fleas persist in lawns or gardens, the grass and ground should be thoroughly sprayed with 1 part of nicotine sulfate in 150 parts of warm water (about 6 teaspoonfuls to 1 gallon), with enough soap added to make the water milky. A 2.5-percent DDT water suspension applied to lawns will also give prompt control.

Control of the Sticktight Flea

Sticktight or chicken fleas are often troublesome in the South. They infest poultry, cats, dogs, rats, and other animals, and they annoy man. The adult fleas attack the head of their host principally and remain attached for weeks without changing position. The edges of the ears of dogs and cats are often covered with them.

These fleas can be controlled by keeping the roosting and nesting places of poultry clean and by spraying the dropping boards, nests, and floor of the chicken house with creosote oil or DDT as described for use in outbuildings. Fowls should be kept from beneath buildings, or such places should be sprayed with creosote oil every 2 or 3 weeks or with DDT every 2 or 3 months. If this is done, treatment of the fowls is not necessary. DDT, derris or cube powder, or carbolated vaseline will kill the fleas on hosts. Powders applied to dogs and cats must be brought in contact with the fleas, as the sticktights do not move around and come in contact with the powder.

Where Insecticides May Be Obtained

Proprietary powders containing derris, cube, pyrethrum, or extracts of these materials, as well as DDT in several forms, are now available in many drug, seed, pet-animal, and other stores. Naphthalene flakes are handled by drug stores. Creosote oil is sold by many dealers in paint, hardware, and lumber.